

Risk of Avian Influenza Transmission in Broiler Supply Chain

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Does this assessment apply to my facility?

Only applies to facilities with:

- Intensively raised commercial poultry
OR
- Contract grow-out broiler premises with
no other poultry on the premises
 - Must practice all-in, all-out single-age
growing system

Facilities MUST:

- Participate in USDA-APHIS National
Poultry Improvement Plan (NPIP)
- Follow the **Secure Broiler Supply (SBS)**
Plan in the event of a Highly Pathogenic
Avian Influenza (HPAI) outbreak

What is the SBS plan?

- Science-based plan made up of outbreak
measures and protocols
- Used to reduce the risk of HPAI spread
associated with the movement of hatch-
ing eggs and day-old chicks into, within
and outside of a Control Area
- Includes many categories, such as active
surveillance, holding time, biosecurity,
cleaning and disinfection

When does this apply to my facility?

- This applies to the movement of broilers
and associated people, vehicles or
equipment, into within and out of the
Control Area during an HPAI outbreak in
the United States.

WHAT ARE THE MAJOR TRANSMISSION PATHWAYS IN THE SPREAD OF HPAI?

The pathways of disease transmission are categorized into three groups:

LOCAL AREA SPREAD – refers to pathways that may cause virus transmission due to a HPAI infected poultry flock nearby

- Insects
- Aerosol – transmission of HPAI through the air
- Wild birds
- Live haul routes

MOVEMENT OF PEOPLE, VEHICLES OR EQUIPMENT

- Critical operational visits
- Growers, employees and their vehicles
- Shared equipment
- Dead bird disposal
- Garbage management

LOAD-OUT PROCESSES

- Load-out and transport to slaughter

HOW IS THE RISK OF EACH PATHWAY MEASURED?

Each pathway was assessed and **LIKEHOOD RATING** of HPAI spread in a broiler flock through that pathway was assigned.

The likelihood that the broiler flock will become infected with HPAI due to the given route of transmission may be:

EXTREMELY HIGH: Almost certain

HIGH: There is more than an even chance

MODERATE: It is unlikely but does occur

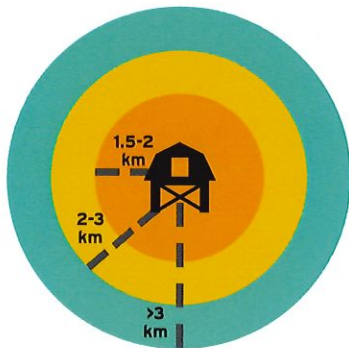
LOW: It is very unlikely

VERY LOW: There is more than a remote chance

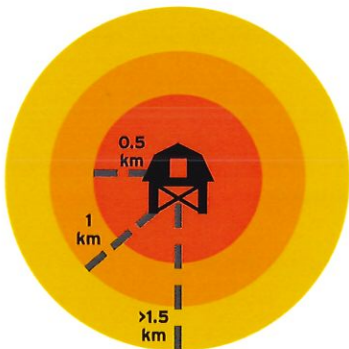
NEGLECTIBLE: There is an insignificant chance


LOCAL AREA SPREAD

Risk of Transmission Via Insects from Known Infected Premises



Risk of Aerosol Transmission from Known Infected Premises





Passerines

Moderate to Low Risk

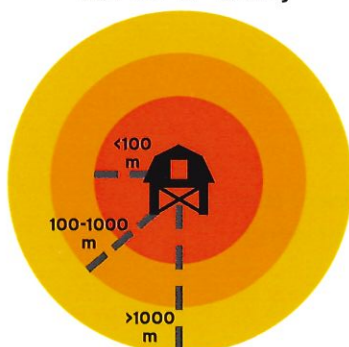


Wild Aquatic Birds

*Low Risk

*This result was based on risk assessment studies before 2022/2023 HPAI outbreak, however, a recent study has indicated wild birds to be major drivers of spread of infection in 2022/2023 HPAI outbreak.

Risk of Transmission Via Live Haul Route Truck Hauling Birds with No PMIP or Testing



 Infected Premise 1 km = 0.62 mi
1000 m = 0.62 mi

INSECTS

- Likelihood varies with distance from the infected premises
- If your facility is 1.5 km (0.93 miles) or closer to the infected flock, there are too many variables to assess the risk

	Distance from Infected Premises (km)		
Source Premise Type	1.5 - 2 km	2 - 3 km	> 3 km
Known Infected Premise	Moderate to Negligible	Low to Negligible	Negligible
Infected Undetected Premise	Low to Negligible	Low to Negligible	Negligible

AEROSOL

- Likelihood varies with distance from the infected premises
- If your facility is 1.5 km (0.93 miles) or further from the infected flock, aerosol is not an important route of transmission

	Distance from Infected Premises (km)		
Source Premise Type	0.5 km	1 km	> 1.5 km
Known Infected Premise	High to Moderate	Moderate	Low
Infected Undetected Premise	Moderate to Low	Low	Low to Negligible

WILD BIRDS

- Likelihood varies with type of bird and exposure type
- Aquatic and large non-aquatic birds do not usually gain entry into poultry barns
- Passerines (examples: songbirds, finches & sparrows) are more likely to gain entry into poultry barns and come in direct contact with poultry

Bird Type	Likelihood Rating
Aquatic wild birds	*Low
Small wild birds (Passerine)	Moderate to Low
Non-aquatic wild birds (Non-Passerine)	Low

LIVE HAUL ROUTES

- Likelihood varies with distance and type of flock on the live haul route
- The disease transmission during the live haul of broilers can occur through feathers, feces, or other contaminated materials.

	Distance from Live Haul (m)		
Characteristics of Live Haul	< 100 m	100 - 1000 m	> 1000 m
Truck with birds with no PMIP or testing	High	Moderate	Low
Truck with birds with less than optimum PMIP and/or testing	Low	Very Low	Negligible
Truck with birds with PMIP and PCR negative testing	Very Low	Negligible	Negligible

MOVEMENT OF PEOPLE, VEHICLES & EQUIPMENT

CRITICAL OPERATIONAL VISITS

- Refers to emergency maintenance or feed delivery that occurs during the Pre-Movement Isolation Period (PMIP)

Contaminated Component	Likelihood Rating
Contaminated feed	Negligible
Feed delivery (driver or vehicle)	Low
Other critical visitors (driver or vehicle)	Moderate to Low

GROWERS, EMPLOYEES & THEIR VEHICLES

- Variable depending on whether the contaminated person enters the poultry barn or does not enter poultry barn
- Only applicable provided that the proper measures (from SBS PMIP) for people are strictly followed, including use of farm-specific clothing and barn-specific footwear

Person Type	Likelihood Rating
People entering poultry barns	Low
People not entering poultry barns	Very Low

GARBAGE MANAGEMENT

- Multiple contaminated items from the poultry operations are disposed in garbage and they may carry the HPAI virus.
- No off-site movement of garbage allowed during the PMIP

Disposal Practice	Likelihood Rating
Garbage management	Low

LOAD-OUT

LOAD-OUT CREWS, VEHICLES OR EQUIPMENT

- If a flock were infected via contaminated load-out crews or equipment, decreasing the time from load-out to slaughter limits the amount of time the disease can spread
- Do not perform “split” or “partial” load-outs as this can leave susceptible and/or infected birds on the farm

Pathway	Likelihood Rating
Load-out and transport to slaughter	Moderate to Low

SHARED EQUIPMENT

- May contaminate the area, personnel or direct to the birds
- During the PMIP, the only off-site equipment that can enter the premises is equipment associated with critical operational visits

Pathway	Likelihood Rating
Shared equipment	Low

DEAD BIRD DISPOSAL

- Disposal of dead birds off-site is risky compared to on-site disposal.
- During PMIP, the disposal of dead birds is mandated to be carried out on-site in storage bins or containers.
- The dead bird storage containers and bins should be secured from scavengers like birds, foxes, and insects. These animals may carry the virus mechanically or biologically.

Disposal Practice	Likelihood Rating
On-farm dead bird disposal during PMIP	Moderate to Low
Off-site dead bird disposal prior to PMIP	Moderate

References

1. Cardona, C., Alexander, C., Bonney, P., Contadini, F., Culhane, M., Goldsmith, T., ... & Walz, E. (2018). An Assessment of the Risk Associated with the Movement of Broilers to Market Into, Within, and Out of a Control Area during a Highly Pathogenic Avian Influenza Outbreak in the United States.
2. USDA-APHIS. (2022). Epidemiologic and other analyses of HPAI affected poultry flocks: July 1, 2022 Interim Report. USDA: APHIS: VS: Center for Epidemiology and Animal Health. Fort Collins, CO. 74 pages.

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